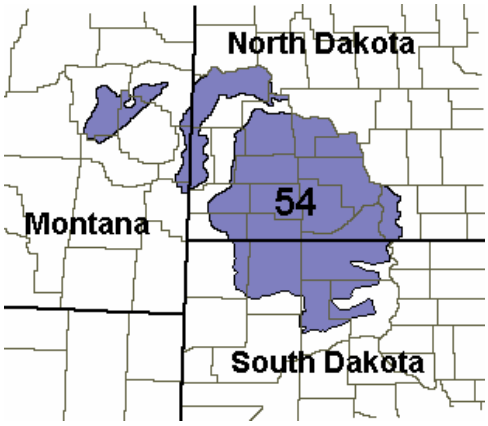
United States Department of Agriculture
Natural Resources Conservation Service

Ecological Site Description



Site Name: Subirrigated

Site Type: Rangeland

Site ID: R054XY032ND

Major Land Resource Area (MLRA): 54 – Rolling Soft Shale Plain

For more information on MLRA's refer to the following web site: http://www.essc.psu.edu/soil_info/soil_lrr/.

Physiographic Features

This site occurs on gently undulating to rolling sedimentary uplands.

Landform: alluvial fan, alluvial flat, floodplain. **Aspect:** NA

	Minimum	Maximum
Elevation (feet):	1600	3600
Slope (percent):	0	2
Water Table Depth (inches):	6	>72
Flooding:		
Frequency:	None	Occasional
Duration:	None	Long
Ponding:		
Depth (inches):	None	None
Frequency:	None	None
Duration:	None	None
Runoff Class:	Negligible	Very low

Climatic Features

MLRA 54 is considered to have a continental climate – cold winters and hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature are characteristic. The climate is the result of this MLRA's location in the geographic center of North America. There are few natural barriers on the northern Great Plains. The air masses move unobstructed across the plains and account for rapid changes in temperature.

Annual precipitation ranges from 14 to 18 inches per year. The normal average annual temperature is about 42°F. January is the coldest month with average temperatures ranging from about 13°F (Beach, North Dakota (ND),) to about 16°F (Bison, South Dakota (SD)). July is the warmest month with temperatures averaging from about 69°F (Beach, ND,) to about 72°F (Timber Lake, SD). The range of normal average monthly temperatures between the coldest and warmest months is about 57°F. This large annual range attests to the continental nature of this MLRA's climate. Hourly winds are estimated to average about 11 miles per hour annually, ranging from about 13 miles per hour during the spring to about 10 miles per hour during the summer. Daytime winds are generally

stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 50 miles per hour.

Growth of native cool-season plants begins in late March and continues to early to mid July. Native warm-season plants begin growth in mid May and continue to the end of August. Green up of cool-season plants can occur in September and October when adequate soil moisture is present.

	Minimum	Maximum
Frost-free period (days):	119	136
Freeze-free period (days):	139	157
Mean Annual Precipitation (inches):	14	18

Average Monthly Precipitation (inches) and Temperature (ºF):

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.41	0.54	2.2	23.8
February	0.37	0.61	8.7	30.4
March	0.51	1.07	17.1	40.0
April	1.13	1.88	28.9	56.8
May	1.98	2.83	40.5	69.3
June	2.83	3.29	49.8	78.3
July	2.05	2.25	54.6	85.2
August	1.49	2.07	53.0	84.3
September	1.29	1.45	42.0	73.4
October	0.89	1.35	31.6	60.4
November	0.48	0.61	19.0	41.5
December	0.42	0.55	8.1	29.0

Climate Stations		Period	
Station ID	**Location or Name**	**From**	**To**
ND0590	Beach	1949	1999
MT7560	Sidney	1949	1999
SD8307	Timber Lake	1948	1999
ND2183	Dickinson FAA AP	1948	1999

For local climate stations that may be more representative, refer to http://www.wcc.nrcs.usda.gov.

Influencing Water Features

Wetland Description:	System	Subsystem	Class	Sub-class
Cowardin, et al., 1979	Palustrine	N/A	Emergent Wetland	Persistent

Representative Soil Features

The common features of soils in this site are the silt loam to fine sandy loam textured subsoils and slopes of zero to two percent. The soils in this site are poorly and somewhat poorly drained and formed in alluvium. The fine sandy loam to silt loam surface layer is 5 to 16 inches thick. The soils have a moderately rapid to moderate infiltration rate. This site should show slight to no evidence of rills, wind scoured areas or pedestalled plants. No water flow paths are seen on this site. The soil surface is stable and intact. Subsurface soil layers are non-restrictive to water movement and root penetration.

Major soil series correlated to this ecological site can be found in Section II of the Natural Resources Conservation Service (NRCS) Field Office Technical Guide or the following web sites:

North Dakota: http://www.nd.nrcs.usda.gov.
South Dakota: http://www.sd.nrcs.usda.gov.
Montana: http://www.mt.nrcs.usda.gov.

Parent Material Kind: alluvium and eolian deposits
Parent Material Origin: sedimentary, unspecified
Surface Texture: loam, silt loam, fine sandy loam
Surface Texture Modifier: none
Subsurface Texture Group: loamy
Surface Fragments ≤ 3" (% Cover): 0
Surface Fragments > 3" (%Cover): 0
Subsurface Fragments ≤ 3" (% Volume): 0-40
Subsurface Fragments > 3" (% Volume): 0-20

	Minimum	Maximum
Drainage Class:	poorly	somewhat poorly
Permeability Class:	moderate	moderately rapid
Depth to first restrictive layer (inches):	>72	>72
Electrical Conductivity (mmhos/cm)*:	0	8
Sodium Absorption Ratio*:	0	5
Soil Reaction (1:1 Water)*:	6.1	8.4
Soil Reaction (0.1M CaCl2)*:	NA	NA
Available Water Capacity (inches)*:	3	7
Calcium Carbonate Equivalent (percent)*:	0	35

* - These attributes represent from 0-40 inches or to the first restrictive layer.

Plant Communities

Ecological Dynamics of the Site:
The site developed under Northern Great Plains climatic conditions, and included natural influence of large herbivores and occasional fire. Changes will occur in the plant communities due to climatic conditions and/or management actions. Due to the nature of the soils along with the high productivity of the subirrigated plants, this site is considered stable. Under continued adverse impacts, a slow decline in vegetative vigor and composition will occur. Under favorable vegetative management treatments the site can quickly return to the Historic Climax Plant Community (HCPC).

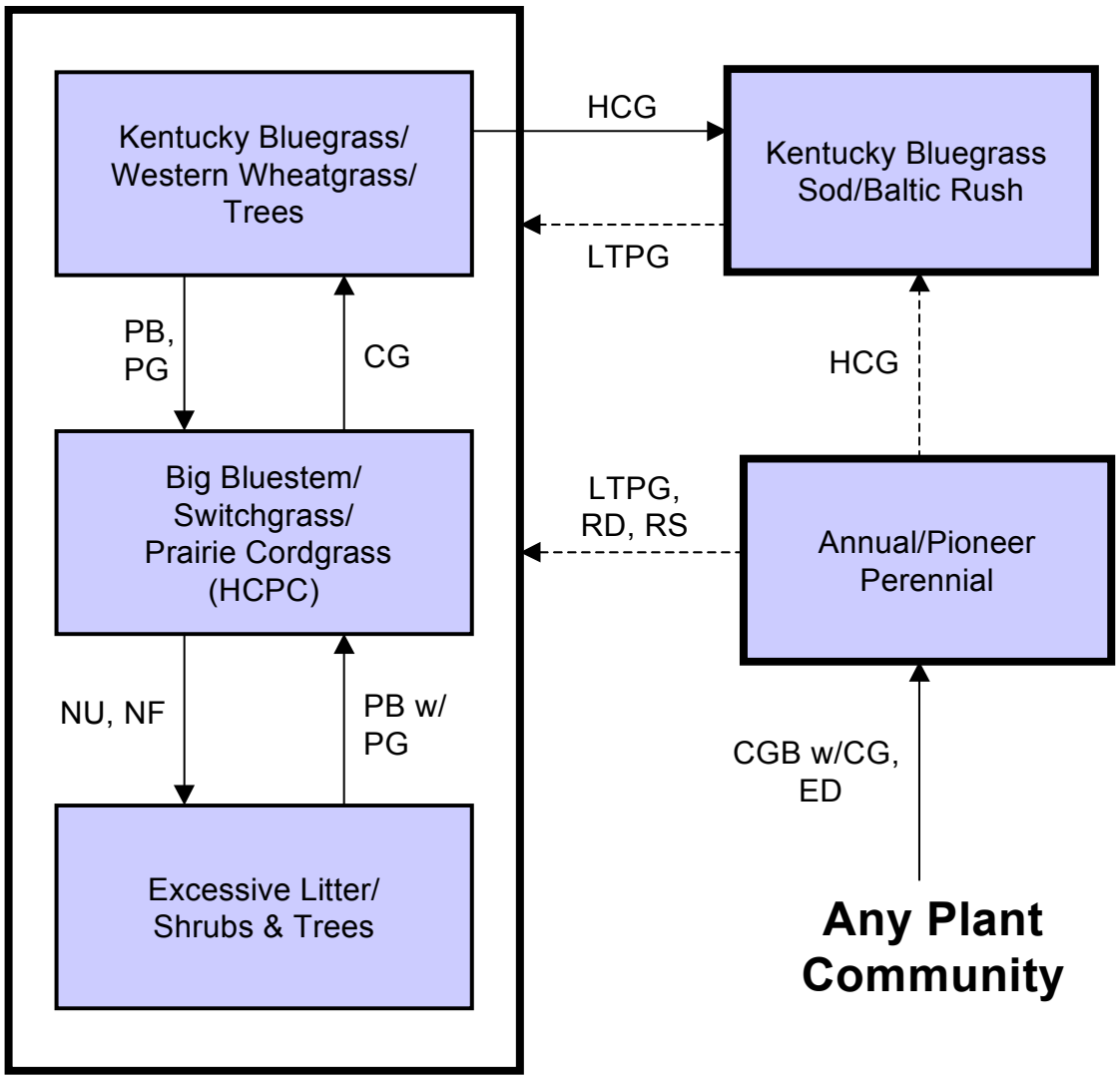
The plant community upon which interpretations are primarily based is the HCPC. The HCPC has been determined by study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends in plant community dynamics ranging from heavily grazed to lightly grazed areas, seasonal use pastures, and historical accounts also have been considered. Subclimax plant communities, states, transitional pathways, and thresholds have been determined through similar studies and experience.

As changes occur from continuous grazing without adequate recovery opportunities between grazing events, species such as Kentucky bluegrass, western wheatgrass, and Baltic rush will invade or increase. Kentucky bluegrass may eventually form a dense sod. Grasses such as big bluestem, prairie cordgrass, and switchgrass will decrease in frequency and production and can be removed from the site. Non-use and lack of fire will cause litter levels and plant decadence or mortality to increase. Under extended periods of non-use and/or lack of fire, both invading grass and forb species such as Kentucky blue, fowl bluegrass, sweetclover, and possibly Canada thistle will dominate the site

along with a heavy increase of shrub and trees including invading trees such as Russian olive. This will eventually result in a wooded plant community.

The following is a diagram that illustrates the common plant communities that can occur on the site and the transition pathways between communities. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



CG - continuous grazing without adequate recovery opportunity; **CGB w/CG** - cropped go-back with continuous grazing; **ED** - excessive defoliation; **HCG** - heavy continuous grazing; **HCPC** - Historic Climax Plant Community; **LTPG** - long-term prescribed grazing (>20 years); **NU, NF** - no fire, non-use; **PB** - prescribed burning; **PG** - prescribed grazing with adequate recovery opportunity; **RD** - removal of disturbance; **RS** - range seeding followed by prescribed grazing.

Plant Community Composition and Group Annual Production

		Big Bluestem/Switchgrass/ Prairie Cordgrass (HCPC)		
COMMON/GROUP NAME	SYMBOL	Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES			*2800 - 3200*	*70 - 80*
TALL WARM-SEASON		**1**	**1600 - 2000**	**40 - 50**
big bluestem	ANGE	1	1400 - 1800	35 - 45
switchgrass	PAVI2	1	200 - 600	5 - 15
Indiangrass	SONU2	1	40 - 200	1 - 5
little bluestem	SCSC	1	0 - 200	0 - 5
prairie cordgrass	SPPE	1	80 - 200	2 - 5
MID COOL-SEASON		**2**	**200 - 400**	**5 - 10**
green needlegrass	NAVI4	2	0 - 120	0 - 3
northern reedgrass	CASTI3	2	120 - 200	3 - 5
porcupine grass	HESP11	2	0 - 120	0 - 3
western wheatgrass	PASM	2	80 - 120	2 - 3
OTHER NATIVE GRASSES		**3**	**120 - 200**	**3 - 5**
bearded wheatgrass	ELTRS	3	40 - 80	1 - 2
Canada wildrye	ELCA4	3	40 - 80	1 - 2
fowl bluegrass	POPA2	3	40 - 80	1 - 2
mat muhly	MURI	3	0 - 80	0 - 2
slender wheatgrass	ELTRT	3	40 - 80	1 - 2
other perennial grasses	2GP	3	0 - 80	0 - 2
GRASS-LIKES		**4**	**120 - 200**	**3 - 5**
Baltic rush	JUBA	4	40 - 80	1 - 2
common spikerush	ELPA3	4	40 - 80	1 - 2
fescue sedge	CABR10	4	40 - 80	1 - 2
Penn sedge	CAPE6	4	80 - 120	2 - 3
woolly sedge	CAPE42	4	40 - 80	1 - 2
other grass-likes	2GL	4	40 - 80	1 - 2
FORBS		*5*	*200 - 400*	*5 - 10*
American licorice	GLLE3	5	40 - 80	1 - 2
American vetch	VIAM	5	0 - 40	0 - 1
anemone	ANEMO	5	0 - 40	0 - 1
Canada goldenrod	SOCA6	5	40 - 80	1 - 2
catnip	NECA2	5	0 - 40	0 - 1
cinquefoil	POTEN	5	0 - 40	0 - 1
dogbane	APOCY	5	0 - 40	0 - 1
downy gentian	GEPU5	5	0 - 40	0 - 1
Flodman's thistle	CIFL	5	0 - 40	0 - 1
heartleaf Alexanders	ZIAP	5	40 - 80	1 - 2
Maximilian sunflower	HEMA2	5	40 - 80	1 - 2
mint	MENTH	5	40 - 80	1 - 2
northern bedstraw	GABO2	5	0 - 40	0 - 1
western yarrow	ACMI2	5	40 - 80	1 - 2
white prairie aster	SYFA	5	40 - 80	1 - 2
wood lily	LIPH	5	0 - 40	0 - 1
other perennial forbs	2FP	5	0 - 80	0 - 2
SHRUBS		*6*	*200 - 400*	*5 - 10*
American plum	PRAM	6	0 - 40	0 - 1
chokecherry	PRVI	6	80 - 120	2 - 3
dwarf false indigo	AMNA	6	40 - 80	1 - 2
hawthorn	CRATA	6	40 - 120	1 - 3
juneberry	AMAL2	6	80 - 120	2 - 3
Missouri gooseberry	RIMI	6	40 - 80	1 - 2
poison ivy	TORY	6	0 - 40	0 - 1
Redosier dogwood	COSE16	6	40 - 80	1 - 2
prairie rose	ROAR3	6	40 - 80	1 - 2
silver buffaloberry	SHAR	6	80 - 160	2 - 4
western snowberry	SYOC	6	160 - 200	4 - 5
willow	SALIX	6	80 - 200	2 - 5
other shrubs	2SHRUB	6	0 - 40	0 - 1
TREES		*7*	*200 - 400*	*5 - 10*
American elm	ULAM	7	0 - 40	0 - 1
boxelder	ACNE2	7	0 - 40	0 - 1
green ash	FRPE	7	40 - 120	1 - 3
peachleaf willow	SAAM2	7	40 - 120	1 - 3
plains cottonwood	PODEM	7	0 - 120	0 - 3
quaking aspen	POTR5	7	0 - 120	0 - 3
other native trees	2TREE	7	0 - 120	0 - 3

Annual Production lbs./acre	LOW	RV	HIGH
GRASSES & GRASS-LIKES	2715 -	3100	- 3425
FORBS	195 -	300	- 425
SHRUBS	195 -	300	- 425
TREES	195 -	300	- 425
TOTAL	3300 -	4000	- 4700

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. RV = Representative Value.

Plant Community Composition and Group Annual Production

		Big Bluestem/Switchgrass/ Prairie Cordgrass (HCPC)			Kentucky Bluegrass/Western Wheatgrass/Trees			Kentucky Bluegrass Sod/ Baltic Rush			Excessive Litter/ Shrubs & Trees		
COMMON/GROUP NAME	**SYMBOL**	**Grp**	**lbs./acre**	**% Comp**	**Grp**	**lbs./acre**	**% Comp**	**Grp**	**lbs./acre**	**% Comp**	**Grp**	**lbs./acre**	**% Comp**
GRASSES & GRASS-LIKES			*2800 - 3200*	*70 - 80*		*2250 - 2550*	*75 - 85*		*1600 - 1800*	*80 - 90*		*1650 - 1950*	*55 - 65*
TALL WARM-SEASON		**1**	**1600 - 2000**	**40 - 50**	**1**	**90 - 150**	**3 - 5**	**1**	**0 - 60**	**0 - 3**	**1**	**60 - 90**	**2 - 3**
big bluestem	ANGE	1	1400 - 1800	35 - 45	1	60 - 150	2 - 5	1	20 - 60	1 - 3	1	60 - 90	2 - 3
switchgrass	PAVI2	1	200 - 600	5 - 15	1	0 - 30	0 - 1	1	0 - 20	0 - 1	1	0 - 30	0 - 1
Indiangrass	SONU2	1	40 - 200	1 - 5									
little bluestem	SCSC	1	0 - 200	0 - 5	1	0 - 30	0 - 1				1	0 - 30	0 - 1
prairie cordgrass	SPPE	1	80 - 200	2 - 5							1	0 - 30	0 - 1
MID COOL-SEASON		**2**	**200 - 400**	**5 - 10**	**2**	**450 - 600**	**15 - 20**	**2**	**100 - 200**	**5 - 10**	**2**	**90 - 120**	**3 - 4**
green needlegrass	NAVI4	2	0 - 120	0 - 3	2	30 - 60	1 - 2				2	30 - 120	1 - 4
northern reedgrass	CASTI3	2	120 - 200	3 - 5							2	0 - 30	0 - 1
porcupine grass	HESP11	2	0 - 120	0 - 3	2	0 - 30	0 - 1				2	0 - 30	0 - 1
western wheatgrass	PASM	2	80 - 120	2 - 3	2	450 - 600	15 - 20	2	100 - 200	5 - 10	2	60 - 120	2 - 4
OTHER NATIVE GRASSES		**3**	**120 - 200**	**3 - 5**	**3**	**90 - 150**	**3 - 5**	**3**	**100 - 200**	**5 - 10**	**3**	**120 - 240**	**4 - 8**
bearded wheatgrass	ELTRS	3	40 - 80	1 - 2	3	0 - 30	0 - 1				3	30 - 60	1 - 2
Canada wildrye	ELCA4	3	40 - 80	1 - 2							3	0 - 30	0 - 1
fowl bluegrass	POPA2	3	40 - 80	1 - 2	3	60 - 120	2 - 4	3	100 - 200	5 - 10	3	120 - 240	4 - 8
mat muhly	MURI	3	0 - 80	0 - 2	3	30 - 60	1 - 2	3	40 - 60	2 - 3	3	0 - 30	0 - 1
prairie junegrass	KOMA				3	30 - 60	1 - 2	3	40 - 60	2 - 3	3	30 - 60	1 - 2
red threeawn	ARPUL				3	30 - 60	1 - 2	3	40 - 60	2 - 3	3	0 - 30	0 - 1
slender wheatgrass	ELTRT	3	40 - 80	1 - 2	3	0 - 30	0 - 1				3	0 - 30	0 - 1
other perennial grasses	2GP	3	0 - 80	0 - 2	3	30 - 60	1 - 2	3	0 - 20	0 - 1	3	0 - 30	0 - 1
GRASS-LIKES		**4**	**120 - 200**	**3 - 5**	**4**	**150 - 300**	**5 - 10**	**4**	**200 - 300**	**10 - 15**	**4**	**90 - 150**	**3 - 5**
Baltic rush	JUBA	4	40 - 80	1 - 2	4	150 - 240	5 - 8	4	140 - 260	7 - 13	4	30 - 60	1 - 2
common spikerush	ELPA3	4	40 - 80	1 - 2	4	90 - 150	3 - 5	4	40 - 160	2 - 8	4	30 - 60	1 - 2
fescue sedge	CABR10	4	40 - 80	1 - 2	4	0 - 30	0 - 1	4	0 - 20	0 - 1	4	30 - 60	1 - 2
Penn sedge	CAPE6	4	80 - 120	2 - 3	4	0 - 30	0 - 1				4	90 - 150	3 - 5
woolly sedge	CAPE42	4	40 - 80	1 - 2	4	0 - 30	0 - 1				4	30 - 60	1 - 2
other grass-likes	2GL	4	40 - 80	1 - 2	4	30 - 60	1 - 2	4	0 - 20	0 - 1	4	0 - 30	0 - 1
NON-NATIVE GRASSES		**5**			**5**	**750 - 1050**	**25 - 35**	**5**	**600 - 800**	**30 - 40**	**5**	**900 - 1050**	**30 - 35**
Kentucky bluegrass	POPR				5	300 - 900	10 - 30	5	200 - 700	10 - 35	5	300 - 1050	10 - 35
bluegrass	POA				5	0 - 150	0 - 5	5	0 - 100	0 - 5	5	0 - 450	0 - 15
smooth bromegrass	BRIN2				5	0 - 750	0 - 25	5	0 - 500	0 - 25	5	0 - 600	0 - 20
cheatgrass	BRTE				5	0 - 60	0 - 2	5	0 - 40	0 - 2	5	0 - 150	0 - 5
FORBS		*6*	*200 - 400*	*5 - 10*	*6*	*240 - 390*	*8 - 13*	*6*	*200 - 300*	*10 - 15*	*6*	*150 - 300*	*5 - 10*
American licorice	GLLE3	6	40 - 80	1 - 2	6	0 - 30	0 - 1				6	60 - 90	2 - 3
American vetch	VIAM	6	0 - 40	0 - 1							6	0 - 30	0 - 1
anemone	ANEMO	6	0 - 40	0 - 1	6	0 - 30	0 - 1				6	30 - 60	1 - 2
black medic	MELU				6	30 - 60	1 - 2	6	20 - 40	1 - 2	6	30 - 60	1 - 2
Canada goldenrod	SOCA6	6	40 - 80	1 - 2	6	60 - 90	2 - 3	6	60 - 100	3 - 5	6	60 - 150	2 - 5
Canada thistle	CIAR4				6	0 - 300	0 - 10	6	0 - 200	0 - 10	6	0 - 210	0 - 7
catnip	NECA2	6	0 - 40	0 - 1	6	30 - 60	1 - 2				6	30 - 60	1 - 2
cinquefoil	POTEN	6	0 - 40	0 - 1	6	30 - 60	1 - 2	6	20 - 40	1 - 2	6	30 - 60	1 - 2
cocklebur	XANTH2				6	0 - 150	0 - 5	6	0 - 200	0 - 10	6	0 - 30	0 - 1
common dandelion	TAOF				6	60 - 90	2 - 3	6	60 - 80	3 - 4	6	30 - 60	1 - 2
cudweed sagewort	ARLU				6	90 - 150	3 - 5	6	100 - 160	5 - 8	6	60 - 90	2 - 3
curlycup gumweed	GRSQ				6	30 - 60	1 - 2	6	40 - 60	2 - 3	6	0 - 30	0 - 1
dogbane	APOCY	6	0 - 40	0 - 1	6	60 - 90	2 - 3	6	40 - 60	2 - 3	6	30 - 60	1 - 2
downy gentian	GEPU5	6	0 - 40	0 - 1							6	0 - 30	0 - 1
Flodman's thistle	CIFL	6	0 - 40	0 - 1	6	60 - 90	2 - 3	6	60 - 80	3 - 4	6	30 - 60	1 - 2
heartleaf Alexanders	ZIAP	6	40 - 80	1 - 2							6	0 - 30	0 - 1
heath aster	SYER				6	60 - 90	2 - 3	6	60 - 100	3 - 5	6	30 - 60	1 - 2
Maximilian sunflower	HEMA2	6	40 - 80	1 - 2							6	30 - 60	1 - 2
mint	MENTH	6	40 - 80	1 - 2	6	0 - 30	0 - 1				6	30 - 60	1 - 2
northern bedstraw	GABO2	6	0 - 40	0 - 1	6	30 - 60	1 - 2	6	40 - 60	2 - 3	6	30 - 60	1 - 2
sweetclover	MELIL				6	30 - 300	1 - 10	6	40 - 200	2 - 10	6	30 - 210	1 - 7
wavyleaf thistle	CIUN				6	60 - 90	2 - 3	6	60 - 80	3 - 4	6	30 - 60	1 - 2
western salsify	TRDU				6	30 - 60	1 - 2	6	40 - 60	2 - 3	6	30 - 60	1 - 2
western yarrow	ACMI2	6	40 - 80	1 - 2	6	60 - 90	2 - 3	6	60 - 80	3 - 4	6	30 - 60	1 - 2
white prairie aster	SYFA	6	40 - 80	1 - 2	6	30 - 60	1 - 2	6	20 - 40	1 - 2	6	0 - 30	0 - 1
wood lily	LIPH	6	0 - 40	0 - 1	6	0 - 30	0 - 1				6	0 - 30	0 - 1
other perennial forbs	2FP	6	0 - 80	0 - 2	6	0 - 60	0 - 2	6	0 - 20	0 - 1	6	0 - 30	0 - 1
other non-native forbs	2FORB				6	0 - 150	0 - 5	6	20 - 200	1 - 10	6	30 - 60	1 - 2
other annual forbs	2FA				6	0 - 30	0 - 1	6	40 - 60	2 - 3	6	0 - 30	0 - 1
SHRUBS		*7*	*200 - 400*	*5 - 10*	*7*	*30 - 60*	*1 - 2*	*7*	*0 - 40*	*0 - 2*	*7*	*300 - 450*	*10 - 15*
American plum	PRAM	7	0 - 40	0 - 1							7	60 - 90	2 - 3
chokecherry	PRVI	7	80 - 120	2 - 3							7	90 - 150	3 - 5
dwarf false indigo	AMNA	7	40 - 80	1 - 2							7	30 - 60	1 - 2
hawthorn	CRATA	7	40 - 120	1 - 3							8	90 - 150	3 - 5
juneberry	AMAL2	7	80 - 120	2 - 3							7	60 - 90	2 - 3
Missouri gooseberry	RIMI	7	40 - 80	1 - 2							7	30 - 60	1 - 2
poison ivy	TORY	7	0 - 40	0 - 1	7	30 - 60	1 - 2				7	30 - 60	1 - 2
Redosier dogwood	COSE16	7	40 - 80	1 - 2							7	30 - 90	1 - 3
prairie rose	ROAR3	7	40 - 80	1 - 2	7	0 - 30	0 - 1	7	0 - 20	0 - 1	7	60 - 90	2 - 3
silver buffaloberry	SHAR	7	80 - 160	2 - 4	8	60 - 90	2 - 3	8	20 - 40	1 - 2	8	60 - 300	2 - 10
western snowberry	SYOC	7	160 - 200	4 - 5	7	30 - 60	1 - 2	7	0 - 40	0 - 2	7	60 - 300	2 - 10
willow	SALIX	7	80 - 200	2 - 5	7	0 - 30	0 - 1				7	60 - 300	2 - 10
other shrubs	2SHRUB	7	0 - 40	0 - 1	7	0 - 30	0 - 1	7	0 - 20	0 - 1	7	0 - 30	0 - 1
TREES		*8*	*200 - 400*	*5 - 10*	*8*	*150 - 300*	*5 - 10*	*8*	*60 - 100*	*3 - 5*	*8*	*300 - 600*	*10 - 20*
boxelder	ACNE2	8	0 - 40	0 - 1	8	0 - 60	0 - 2	8	0 - 20	0 - 1	8	0 - 150	0 - 5
green ash	FRPE	8	40 - 120	1 - 3	8	0 - 60	0 - 2	8	0 - 20	0 - 1	8	90 - 300	3 - 10
peachleaf willow	SAAM2	8	40 - 120	1 - 3	8	0 - 60	0 - 2	8	0 - 20	0 - 1	8	90 - 150	3 - 5
plains cottonwood	PODEM	8	0 - 120	0 - 3	8	0 - 60	0 - 2	8	0 - 20	0 - 1	8	0 - 300	0 - 10
non-native trees	2TREE				8	0 - 150	0 - 5	8	0 - 80	0 - 4	8	0 - 150	0 - 5
other native trees	2TREE	8	0 - 120	0 - 3	8	0 - 60	0 - 2	8	0 - 20	0 - 1	8	0 - 30	0 - 1

Annual Production lbs./acre	LOW RV HIGH	LOW RV HIGH	LOW RV HIGH	LOW RV HIGH
GRASSES & GRASS-LIKES	2715 - 3100 - 3425	1410 - 2415 - 3385	1250 - 1650 - 2325	1915 - 1950 - 2025
FORBS	195 - 300 - 425	220 - 315 - 425	195 - 250 - 325	145 - 225 - 325
SHRUBS	195 - 300 - 425	25 - 45 - 65	0 - 20 - 45	220 - 375 - 500
TREES	195 - 300 - 425	145 - 225 - 325	55 - 80 - 105	220 - 450 - 650
TOTAL	3300 - 4000 - 4700	1800 - 3000 - 4200	1500 - 2000 - 2800	2500 - 3000 - 3500

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. RV = Representative value.

Plant Community and Vegetation State Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data are collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as "Desired Plant Communities" (DPC). According to the USDA NRCS National Range and Pasture Handbook, DPC's will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

Big Bluestem/Switchgrass/Prairie Cordgrass Plant Community

This is the interpretive plant community and is considered to be the HCPC. This plant community evolved with grazing by large herbivores and is well suited for grazing by domestic livestock and can be found on areas that are grazed and where the grazed plants receive adequate periods of rest during the growing season in order to recover. Historically, fires occurred infrequently but were a very important natural effect on this site. The potential vegetation is about 70 percent grasses and grass-likes, 10 percent forbs, 10 percent shrubs, and 10 percent trees of the total air-dry weight.

Tall warm season grasses dominate this community. The major grasses include big bluestem, switchgrass, prairie cordgrass, and little bluestem. Other grasses and grass-likes occurring on the community include western wheatgrass, green needlegrass, northern reedgrass, Canada wildrye, sedges, and rush species. Key forbs include American licorice, sunflower, aster, goldenrod, and mint. Shrubs and tree species that recover quickly after fire events are juneberry, western snowberry, willows, boxelder, hawthorn, chokecherry, and cottonwood.

This plant community is diverse, stable, productive, and is well adapted to the Northern Great Plains. The high water table supplies much of the moisture for plant growth. Community dynamics, nutrient cycle, water cycle, and energy flow are functioning properly. Plant litter is properly distributed with very little movement off-site and natural plant mortality is very low. The diversity in plant species allows for a high tolerance to a fluctuating water table. Run-off from adjacent sites and moderate or high available water capacity provides a favorable soil-water-plant relationship.

The following growth curve is an estimate of the monthly percentages of total annual growth of the dominant species expected during a normal year:
Growth curve number: ND5403
Growth curve name: Missouri Slope, Native Grasslands, Warm-season dominant.
Growth curve description: Warm-season, tall/mid grass dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	4	17	40	30	8	1	0	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods between grazing events will shift this plant community to the *Kentucky Bluegrass/Western Wheatgrass/Trees Plant Community*.

- Non-use and no fire will move this plant community to the *Excessive Litter/Shrub and Trees Plant Community*.

- Excessive defoliation (i.e., areas of heavy animal concentration,) will convert the plant community to the *Annual/Pioneer Perennial Plant Community*.

- Cropped go-back land with continuous grazing will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.

Kentucky Bluegrass/Western Wheatgrass/Trees Plant Community

This plant community results from continuous grazing without adequate recovery periods between each grazing event during the growing season. Recognition of this plant community will enable the land user to implement key management actions before a significant ecological threshold is crossed.

Kentucky bluegrass and western wheatgrass are the dominant species. Big bluestem, green needlegrass, switchgrass, and Indiangrass are greatly reduced. Forb species would include asters, goldenrod, cudweed sagewort, heath aster, wavyleaf thistle, and western yarrow. Invasive forbs are sweetclover, dandelion, and possibly Canada thistle. Shrubs and tree regeneration have completely disappeared leaving little to no shrub understory beneath large trees.

Plant diversity and production have been reduced. The soil remains stable. Water cycle, nutrient cycle and energy flow is slightly reduced but continues to adequately function. Water table tends to rise closer to the surface, which favors an increase of Baltic rush and common spikerush.

The following growth curve is an estimate of the monthly percentages of total annual growth of the dominant species expected during a normal year.
Growth curve number: ND5409
Growth curve name: Missouri Slope, Lowland, Cool-season Dominant.
Growth curve description: Lowland, cool-season dominant, tall grasses and grass-likes.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	10	37	35	5	2	8	0	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Heavy continuous grazing without adequate recovery periods between grazing events will move this plant community across an ecological threshold to the *Kentucky Bluegrass Sod/Baltic Rush Plant Community*.

- Prescribed grazing or prescribed burning followed by prescribed grazing will move this plant community toward the *HCPC*. This would require long-term management with prescribed grazing and prescribed burning under controlled conditions.

- Excessive defoliation (i.e., areas of heavy animal concentration,) will convert the plant community to the *Annual/Pioneer Perennial Plant Community*.

- Cropped go-back land with continuous grazing will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.

Excessive Litter/Shrubs & Trees Plant Community

This plant community develops after an extended period (10 to 20 years or more) of non-use and exclusion of fire. Eventually litter levels become high enough to reduce native grass vigor, diversity, and density.

Kentucky bluegrass flourishes in this environment and may dominate this plant community. Common forbs include Canada goldenrod, American licorice, cudweed sagewort, and dogbane. Invading forbs are Canada thistle, sweetclover and dandelion. Shrubs such as western snowberry, willow, Juneberry, rose, and chokecherry will increase in density and cover. Trees species such as green ash, boxelder, cottonwood, peachleaf willow, and others tend to produce a dense canopy cover shading out the grass understory.

This plant community is resistant to change without prescribed grazing and fire. The combination of both grazing and fire is most effective in moving this plant community towards the HCPC. Soil erosion is low. Runoff is similar to the HCPC. Once this plant community is reached, time and external resources will be needed to see any immediate recovery.

The following growth curve is an estimate of the monthly percentages of total annual growth of the dominant species expected during a normal year:
Growth curve number: ND5406
Growth curve name: Missouri Slope, Introduced Cool-season Grasses.
Growth curve description: Introduced cool-season grasses.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	10	35	35	5	2	8	2	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Periodic prescribed burning along with prescribed grazing will move this plant community toward the *Big Bluestem/Switchgrass/Prairie Cordgrass Plant Community (HCPC)*. This would require long-term management with both prescribed grazing and prescribed burning under controlled conditions.

- Excessive defoliation (i.e., areas of heavy animal concentration,) will convert the plant community to the *Annual/Pioneer Perennial Plant Community*.

- Cropped go-back land with continuous grazing will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.

Kentucky Bluegrass Sod/Baltic Rush Plant Community

This plant community developed with heavy continuous grazing without adequate recovery periods between grazing events. Kentucky bluegrass and Baltic rush, along with fowl bluegrass and common spikerush dominate the community. Kentucky bluegrass can develop into a thick sod. Prairie cordgrass, little bluestem, Indiangrass, green needlegrass, northern reedgrass, and porcupine grass have been removed. Big bluestem, switchgrass, and western wheatgrass may persist in trace amounts, greatly reduced in vigor, and in some instances, not readily seen. Western yarrow, dandelion, and goldenrod have increased. Key shrubs have been severely reduced in vigor or removed completely. A few scattered old decadent trees do remain.

This plant community is resistant to change due to grazing tolerance of Kentucky bluegrass. Production and diversity is significantly reduced when compared to the HCPC. Loss or reduction of cool season grasses, tall warm season grasses, and shrub component have negatively impacted energy flow and nutrient cycling. Water infiltration is reduced significantly due to the massive shallow root system “root pan,” characteristic of sodbound Kentucky bluegrass. The water table has risen closer to the surface that greatly favors the rush species. It will take a very long time to restore this plant community back to the HCPC with improved management. Renovation would be very costly.

The following growth curve is an estimate of the monthly percentages of total annual growth of the dominant species expected during a normal year:
Growth curve number: ND5406
Growth curve name: Missouri Slope, Introduced Cool-season Grasses.
Growth curve description: Introduced cool-season grasses.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	10	35	35	5	2	8	2	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Long term prescribed grazing with adequate recovery periods following each grazing event and proper stocking over long periods of time will move this plant community toward the *Kentucky Bluegrass/Western Wheatgrass/Trees Plant Community*. It may eventually return to the *HCPC* through associated successional plant community stages assuming an adequate seed/vegetative source is available. This process may take greater than 20 years.

Annual/Pioneer Perennial Plant Community

This plant community develops under severe disturbance and/or excessive defoliation. This can result from heavy livestock or wildlife concentration, and cropping abandonment (go-back land). The dominant vegetation includes pioneer annual grasses, forbs, invaders, and early successional biennial and perennial species. Grasses and grass-likes may include Baltic rush, common spikerush, sedges, Kentucky bluegrass, smooth bromegrass, prairie junegrass and western wheatgrass. The dominant forbs include curlycup gumweed, marestail, salsify, kochia, field bindweed, kochia, thistles, cudweed sagewort, western ragweed, pussytoes, prostrate verbena, and other early successional species. Shrubs that may be present include dogwood and willow. Plant species from adjacent ecological sites may become minor components of this plant community. The community also is susceptible to invasion of other non-native species such as Canada thistle, due to severe soil disturbances and increased bare ground. Many other annual and perennial forbs, including nonnative species, may invade the site.

This plant community is resistant to change, as long as soil disturbance or severe vegetation defoliation persists, thus holding back secondary plant succession. Soil erosion is potentially high in this vegetation state. Reduced surface cover, low plant density, low plant vigor, loss of root biomass, and soil compaction, all contribute to decreased water infiltration, increased runoff, and accelerated erosion rates.

Significant economic inputs, management, and time would be required to move this plant community toward a higher successional stage and a more productive plant community. Secondary succession is highly variable, depending upon availability and diversity of a viable seed bank of higher successional species within the existing plant community and neighboring plant communities. This plant community can be renovated to improve the production capability, but management changes would be needed to maintain the new plant community. The total annual production ranges from 500 to 2,000 lbs./ac. (air-dry weight) depending upon vegetative conditions.

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Under long-term prescribed grazing and removal of disturbance, including adequate rest periods, this plant community will move through the successional stages, and may eventually lead to the *Big Bluestem/Switchgrass/Prairie Cordgrass Plant Community (HCPC).* Depending on the slope, aspect, and size, and if adequate perennial plants exist, this change can occur more rapidly. This process will likely take a long period of time (25+ years).

- Range seeding with deferment and prescribed grazing can convert this to a plant community resembling the *Big Bluestem/Switchgrass/Prairie Cordgrass Plant Community*.

- Heavy, continuous grazing will lead this plant community towards the *Kentucky Bluegrass Sod/Baltic Rush Plant Community*.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

-- Under Development --

Big Bluestem/Switchgrass/Prairie Cordgrass Plant Community:

Kentucky Bluegrass/Western Wheatgrass/Trees Plant Community:

Kentucky Bluegrass Sod/Baltic Rush Plant Community:

Excessive Litter/Shrubs & Trees Plant Community:

Annual/Pioneer Perennial Plant Community:

Animal Preferences (Quarterly – 1,2,3,4†)

Common Name	Cattle				Sheep				Horses				Deer				Antelope				Bison				Elk			
Grasses & Grass-likes																												
Baltic rush	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
bearded wheatgrass	U	P	U	U	N	D	U	N	U	P	U	U	N	D	U	N	N	D	U	N	U	P	U	U	U	P	U	U
big bluestem	U	D	P	D	U	D	U	U	U	D	P	D	U	D	U	U	U	D	U	U	U	D	P	D	U	D	P	D
bluegrass	U	D	U	U	D	P	U	D	U	D	U	U	U	P	N	D	U	P	N	D	U	D	U	U	U	D	U	U
Canada wildrye	U	D	U	U	N	U	N	N	U	D	U	U	N	U	N	N	N	U	N	N	U	D	U	U	U	D	U	U
cheatgrass	U	D	U	U	N	P	U	N	U	D	U	U	N	P	U	N	N	P	U	N	U	D	U	U	U	D	U	U
common spikerush	N	U	D	U	N	U	U	N	N	U	D	U	N	U	U	N	N	U	U	N	N	U	D	U	N	U	D	U
fescue sedge	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U
fowl bluegrass	N	U	U	N	N	U	U	N	N	U	U	N	N	U	U	N	N	U	U	N	N	U	U	N	N	U	U	N
green needlegrass	U	P	U	D	N	P	N	P	U	P	U	D	N	P	N	P	N	P	N	P	U	P	U	D	U	P	U	D
Indiangrass	U	D	P	D	U	D	U	U	U	D	P	D	U	D	U	U	U	D	U	U	U	D	P	D	U	D	P	D
little bluestem	U	D	D	U	N	D	N	N	U	D	D	U	N	D	N	N	N	D	N	N	U	D	D	U	U	D	D	U
mat muhly	N	U	U	N	U	U	D	U	N	U	U	N	U	U	U	U	U	U	U	U	N	U	U	N	N	U	U	N
northern reedgrass	U	P	U	D	N	D	N	U	U	P	U	D	N	D	N	U	N	D	N	U	U	P	U	D	U	P	U	D
Penn sedge	U	P	U	D	U	P	N	D	U	P	U	D	U	D	U	D	U	D	U	D	U	P	U	D	U	P	U	D
porcupine grass	U	P	U	D	N	D	N	U	U	P	U	D	N	D	N	U	N	D	N	U	U	P	U	D	U	P	U	D
prairie cordgrass	U	D	D	U	N	N	N	N	U	D	D	U	N	N	N	N	N	N	N	N	U	D	D	U	U	D	D	U
slender wheatgrass	U	P	U	U	N	D	U	N	U	P	U	U	N	D	U	N	N	D	U	N	U	P	U	U	U	P	U	U
smooth bromegrass	U	P	U	U	U	P	U	U	U	P	U	U	U	P	U	U	U	P	U	U	U	P	U	U	U	P	U	U
switchgrass	U	D	D	U	U	D	U	U	U	D	D	U	N	N	N	N	N	N	N	N	U	D	D	U	U	D	D	U
western wheatgrass	U	P	D	U	N	D	N	N	U	P	D	U	N	D	N	N	N	D	N	N	U	P	D	U	U	P	D	U
woolly sedge	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U
Forbs																												
American licorice	U	U	D	U	N	U	U	N	U	U	D	U	N	U	U	N	N	U	U	N	U	U	D	U	N	U	U	N
American vetch	U	D	P	U	U	P	P	U	U	D	P	U	U	P	P	U	U	P	P	U	U	D	P	U	U	P	P	U
anemone	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N
Canada goldenrod	N	N	U	N	N	U	U	N	N	N	U	N	N	U	U	N	N	U	U	N	N	N	U	N	N	N	U	N
cinquefoil	U	U	D	U	U	U	U	U	U	U	D	U	U	U	U	U	U	U	U	U	U	U	D	U	U	U	U	U
dogbane	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
downy gentian	N	N	N	N	N	N	U	N	N	N	N	N	N	N	U	N	N	N	U	N	N	N	N	N	N	N	N	N
Flodman's thistle	N	U	U	N	N	U	U	N	N	U	U	N	N	U	U	N	N	U	U	N	N	U	U	N	N	U	U	N
heartleaf Alexanders	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U
Maximilian sunflower	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U
mint	N	N	U	N	N	U	U	N	N	N	U	N	N	U	U	N	N	U	U	N	N	N	U	N	N	N	U	N
northern bedstraw	N	N	N	N	N	U	D	N	N	N	N	N	N	U	D	N	N	U	D	N	N	N	N	N	N	N	N	N
western yarrow	U	U	U	U	N	U	U	N	U	U	U	U	N	U	U	N	N	U	U	N	U	U	U	N	N	U	U	N
white prairie aster	U	U	D	U	N	N	N	N	U	U	D	U	N	N	N	N	N	N	N	N	U	U	D	U	N	N	N	N
wood lily	N	U	U	N	N	U	D	U	N	U	U	N	N	U	D	U	N	U	D	U	N	U	U	N	N	U	U	N
Shrubs																												
American plum	D	U	U	D	D	U	U	D	D	U	U	D	P	U	D	D	D	U	U	D	D	U	U	D	D	U	U	D
chokecherry	D	T	T	D	D	T	T	D	D	T	T	D	P	U	D	P	D	U	U	D	D	T	T	D	P	U	U	P
dwarf false indigo	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U
hawthorn	N	U	U	U	N	D	D	U	N	U	U	U	N	D	D	U	N	U	D	U	N	U	U	U	N	D	D	U
juneberry	N	D	P	U	N	D	P	U	N	D	P	U	N	D	P	U	N	D	P	U	N	D	P	U	N	D	P	U
Missouri gooseberry	N	N	U	N	N	U	U	U	N	N	U	N	N	U	U	U	N	U	U	U	N	N	U	N	N	U	U	U
poison ivy	N	N	N	N	U	U	U	U	N	N	N	N	U	U	U	U	U	U	U	U	N	N	N	N	U	U	U	U
prairie rose	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U
Redosier dogwood	N	U	U	N	N	U	D	U	N	U	U	N	N	U	D	U	N	U	D	U	N	U	U	N	N	U	D	U
silver buffaloberry	D	U	U	U	D	U	U	U	D	U	U	U	P	U	D	P	U	U	U	U	D	U	U	U	D	U	U	U
western snowberry	U	U	U	U	U	U	U	U	U	U	U	U	D	U	D	D	U	U	U	U	U	U	U	U	D	U	U	U
willow	P	U	D	P	P	U	D	P	P	U	D	P	P	U	D	P	U	U	U	U	P	U	D	P	P	U	D	P
Trees																												
American elm	N	N	N	N	N	N	N	N	N	N	N	N	N	U	D	N	N	N	N	N	N	N	N	N	N	N	N	N
boxelder	N	N	N	U	N	N	U	U	N	N	N	U	N	N	U	U	N	N	U	U	N	N	N	U	N	N	U	U
green ash	N	U	D	U	N	D	D	U	N	U	D	U	N	D	D	U	N	U	D	U	N	U	D	U	N	D	D	U
peachleaf willow	N	D	D	U	N	D	P	U	N	D	D	U	N	D	P	U	N	D	D	U	N	D	D	U	N	D	P	U
plains cottonwood	D	U	U	D	D	U	U	D	D	U	U	D	D	U	D	D	D	U	U	D	D	U	U	D	D	U	U	D
quaking aspen	D	U	U	D	D	U	U	D	D	U	U	D	D	U	D	D	D	U	U	D	D	U	U	D	D	U	U	D

N = not used; **U** = undesirable; **D** = desirable; **P** = preferred; **T** = toxic
† Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

Animal Community – Grazing Interpretations

The following table lists suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) under normal growing conditions; however, *continuous grazing is not recommended.* These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process and may need to be adjusted due to diet preferences of other types or kinds of livestock and/or other factors. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using the following stocking rate information along with animal preference data, particularly when grazers other than cattle are involved. With consultation of the land manager, more intensive grazing management may result in improved harvest efficiencies and increased carrying capacity.

Plant Community	Production (lbs./acre)	Carrying Capacity [1] (AUM/acre)
Big Bluestem/Switchgrass/Prairie Cordgrass (HCPC)	4000	1.26 [2]
Kentucky Bluegrass/Western Wheatgrass/Trees	3000	0.95 [2]
Excessive Litter/Shrubs & Trees	3000	0.95 [2]
Kentucky Bluegrass Sod/Baltic Rush	2000	0.63 [2]
Annual/Pioneer Perennial	-- [3]	-- [3]

[1] Continuous season-long grazing by cattle under average growing conditions.
[2] Stocking rates may need to be adjusted due to palatability and/or availability of forage.
[3] Highly variable; stocking rate needs to be determined onsite.

Hydrology Functions

Water is not a principal factor limiting herbage production on this site. The site is dominated by soils in hydrologic groups D and B. Infiltration varies from moderately rapid to moderate, and runoff potential varies from negligible to very low depending on soil hydrologic group and ground cover. In many cases, areas with greater than 75 percent ground cover have the greatest potential for high infiltration and lower runoff. An exception would be where short grasses form a dense sod and dominate the site. Areas where ground cover is less than 50 percent have the greatest potential to have reduced infiltration and higher runoff (refer to Section 4, NRCS National Engineering Handbook, for runoff quantities and hydrologic curves).

Recreational Uses

This site provides hunting opportunities for upland game species. The wide varieties of plants which bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

This site has potential for wood products from trees and shrubs.

Other Products

Seed harvest of native plant species can provide additional income on this site.

Supporting Information

Associated Sites

(054XY023ND) – Loamy Overflow
(054XY024ND) – Saline Lowland
(054XY036ND) – Wet Land
(054XY037ND) – Wet Meadow

Similar Sites

(054XY0023ND) – Loamy Overflow (LyOv)
[Moderately well drained soils in intermittent drainage ways, swales, and areas that frequently receive additional moisture throughout the growing season, with no apparent water table. Indicator species: big bluestem with western wheatgrass and green needlegrass, American licorice, and western snowberry. The site has no switchgrass or prairie cordgrass, less big bluestem, more green needlegrass and western wheatgrass; less production, no water table.]

Inventory Data References

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. All descriptions were peer reviewed and/or field tested by various private, state, and federal agency specialists. Those involved in developing this site description include: Dennis Froemke, NRCS Range Management Specialist; Jeff Printz, NRCS State Range Management Specialist; Stan Boltz, NRCS Range Management Specialist; Darrell Vanderbusch, NRCS Resource Soil Scientist; L. Michael Stirling, NRCS Range Management Specialist; Royal Handegard, NRCS Soil Conservationist; Josh Saunders, NRCS Range Management Specialist; Jody Forman, NRCS Grazing Land Management Specialist; David Dewald, NRCS State Biologist; and Brad Podoll, NRCS Biologist.

Data Source	Number of Records	Sample Period	State	County
Ocular Estimates	2	2001	ND	Grant

State Correlation

This site has been correlated with North Dakota and South Dakota in MLRA 54.

Field Offices

Baker, MT	Buffalo, SD	Faith, SD	Mott, ND
Beach, ND	Carson, ND	Hettinger, ND	Selfridge, ND
Beulah, ND	Culbertson, MT	Killdeer, ND	Sidney, MT
Bison, SD	Dickinson, ND	Mandan, ND	Watford City, ND
Bowman, ND	Dupree, SD	McIntosh, SD	Wibaux, MT

Relationship to Other Established Classifications

Level IV Ecoregions of the Conterminous United States: 43a – Missouri Plateau.

Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (http://hpccsun.unl.edu).

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (http://www.wcc.nrcs.usda.gov).

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Site Description Approval

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State Range Management Specialist Date

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